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F/S/F trilayer: 3D model of proximity effect

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Abstract

For the ferromagnetic metal/superconductor/ferromagnetic metal (F/S/F) trilayer we take into account the spatial variations of the pair amplitude not only across the F/S boundaries (the 1D case) but also along these interfaces (the 3D case). Our 3D model of the proximity effect also involves an indirect interaction of the both F layers magnetizations via the S layer. It leads to competition not only between the 1D and 3D LOFF states, but also between the antiferromagnetic and ferromagnetic superconducting states of the F/S/F trilayer. Possible nanodevices are discussed. © 2006 American Institute of Physics.

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Keywords

Data recording, Ferromagnetism, Multilayers, Proximity effect, Superconductivity